

ADJUSTMENT field by placing a dollar cost (increase or decrease) that is specific to the company's different cost in the given density, if applicable.

3.2.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of the LEC engineering Team subject matter experts.

3.2.3 Rationale

Allows the user to input their company manhole cost data on a company-specific basis for underground cable in Normal Rock placement situations by density.

3.3 Soft Rock Manholes

3.3.1 Definition

These are costs associated with manholes placed in soft surface rock or difficult soil. Unit sizes include hand holes with maximum capacity of two ducts, 4'x6' manholes with a capacity of four ducts, a 12'x6'x7', and an Adder size of 12'x6'x7', each of which can connect to nine ducts. An Adder refers to additional midsections that are required when duct requirements exceed the standard nine-duct manhole size of 12x6x7. The conduit per duct foot input is material cost only and does not include any trenching.

3.3.2 Suggested Input Value

There are two COST input fields for Per Unit Cost available to the user: Material and Installation, which applies to all nine density zones. Within each density zone there are two additional input fields, Cost Adjustment and Percent Assigned Telephone for each unit such as a four-duct manhole. The Material cost represents the material, supply cost, tax, and engineering. The Installation covers all costs associated with placing the manhole and includes restoring the ground to pre-digging conditions. The Cost Adjustment is not mandatory, but allows the user to increase or decrease the cost by density, if desired. The Unit Cost, for the Handhole, Manhole, and Adder is calculated upon saving the input file and uses the Material plus Installation plus Cost Adjustment time Percent Assigned Telephone for each density. Similarly, the Conduit Per Duct Foot is calculated using Material time Percent Assigned Telephone for each density.

The first column shows the Unit. The second column reflects the Material Per Unit Costs. The third column displays the Installation Per Unit Costs. For the subsequent columns, in each density, the first column reflects the Cost Adjustment of the activity for the specific density group and terrain difficulty. The second column represents the Percent Assigned Telephone. For example: If 75 percent is represented for a handhole, this indicates that the telephone company shares this handhole with other companies 25 percent of the time when placing underground cable.

There are nine density zones designed in BCPM. The same derived costs, and Percent Assigned Telephone maybe utilized in all densities or maybe adjusted by using the COST ADJUSTMENT field by placing a dollar cost (increase or decrease) that is specific to the company's different cost in the given density, if applicable.

3.3.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of the LEC engineering Team subject matter experts.

3.3.4 Rationale

Allows the user to input their company manhole cost data on a company-specific basis for underground cable in Soft Rock placement situations by density.

4 Spacing Inputs

Manhole and pole spacing defaults are established by averaging the spacing data provided by the LECs. Denser areas (above 651 households per square mile) require shorter spacing due to larger cables, greater cable sag, and clearance requirements. Larger aerial cables, due to their weight, will sag more in mid-span between poles. Larger UG cables increase pulling tension for pulls between manholes.

4.1 Distribution Spacing Table

4.1.1 Definition

These inputs represent the distance, in feet, between the various elements of the OSP Distribution plant structure elements. There are three different spacing requirements; Manhole, Pole and Guy spacing for each of the nine density zones in BCPM.

4.1.2 Suggested Input Value

There are three input fields available to the user. Manhole Spacing, Pole Spacing and Guy Spacing. The entry is in feet for the respective item and requires whole numbers. Fractions are not allowed such as 725.5 feet. The spacing parameters are a component of the Structure costs Model algorithms in the Loop.xls module when pricing out the various pieces of the OSP facilities for Aerial cables.

The first column shows the nine density zones in BCPM. The second, third and fourth columns are the user-input columns for Manhole, Pole and Guy spacing respectively. The Relative Pole Unit's product is the number of spans between the Anchors and Guys. For Example; 6.00 reflects the placement of a Guy every six poles. The Relative Pole Units is calculated, upon saving the input file, and uses Guy Spacing divided by Pole Spacing for each density. The number is then utilized in the calculation of the Structure costs to

derive the Weighted Amount for Anchors and Guys, which is used in either Aerial Feeder or Distribution cables placement for Normal, Soft Rock and Hard Rock conditions by density. Reference Section 2.1, 2.2 2.7, 2.8, 2.13 or 2.14 for Weighted Amount calculation on Anchors and Guys.

4.1.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of the LEC engineering Team subject matter experts.

4.1.4 Rationale

Allows the user to input their company Spacing requirement for Manhole, Pole and Guy data on a company-specific basis for Aerial Distribution cable in either Soft Rock, Hard Rock or Normal placement situations by density.

4.2 Feeder Spacing Table

4.2.1 Definition

These inputs represent the distance, in feet, between the various elements of the OSP Feeder plant. There are three different spacing requirements; Manhole, Pole and Guy spacing for each of the nine density zones in BCPM.

4.2.2 Default Input Value

There are three input fields available to the user. Manhole Spacing, Pole Spacing and Guy Spacing. The entry is in feet for the respective item and requires whole numbers. Fractions are not allowed such as 725.5 feet. The spacing parameters are a component of the Structure costs Model algorithms in the Loop.xls module when pricing out the various pieces of the OSP facilities for Aerial cables.

The first column shows the nine density zones in BCPM. The second, third and fourth columns are the user-input columns for Manhole, Pole and Guy spacing respectively. The Relative Pole Unit's product is the number of spans between the Anchors and Guys. For Example; 6.00 reflects the placement of a Guy every six poles. The Relative Pole Units is calculated, upon saving the input file, and uses Guy Spacing divided by Pole Spacing for each density. The number is then utilized in the calculation of the Structure costs to derive the Weighted Amount for Anchors and Guys, which is used in either Aerial Feeder or Distribution cables placement for Normal, Soft Rock and Hard Rock conditions by density. Reference Section 2.1, 2.2 2.7, 2.8, 2.13 or 2.14 for Weighted Amount calculation on Anchors and Guys.

4.2.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of the LEC engineering Team subject matter experts.

4.2.4 Rationale

Allows the user to input their company Spacing requirement for Manhole, Pole and Guy data on a company-specific basis for Aerial Feeder cable in either Soft Rock, Hard Rock or Normal placement situations by density.

5.1 Percent Table Inputs

The Plant type mix for Distribution copper, Feeder copper, and Fiber feeder is based on a forward look as to the type of plant expected to be placed in each density zone. It is expected that less aerial plant will be placed in a forward look due to high first cost, high maintenance costs, and local ordinances requiring all new facilities to be placed out of sight.

5.1 Copper Plant Mix Table [CopperHardMixTable]

5.1.1 Definition

This table represents the percentages, by density, when facility placement [Copper] occurs in Hard Rock Terrain situations for Underground, Buried and Aerial. Generally, in low densities there is a greater percent of Buried plant than Underground, and conversely, in higher densities more UnderGround than Buried plant.

5.1.2 Suggested Input Value

The following table is applied when copper facilities are being placed in Hard Rock Terrain conditions for a given density. There are two input fields available to the user: Underground Percent and Buried Percent. The Aerial Percent is calculated upon entering the other two percentages.

The Model algorithms, in the Loop.xls module, use these percentages in determining Percent Drop Aerial, Part2 Aerial Copper Distance, Part2 Buried Distance, Part2 Underground Distance and Aerial cable Distance. The percentage adjusts the material and structure costs, for the plant mix selected, and used in calculating Term, Drop and NID, Subfeeder Part2 and DLC to FDI segments of the OSP facilities

There are nine density zones designed in BCPM. The model sponsors were asked to make inputs available for each of the density groups.

5.1.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of The LEC engineering Team subject matter experts.

5.1.4 Rationale

Based on where the company builds their OSP facilities determines the percentage for the type of plant to be deployed. Thereby, resulting in specific percentages of Underground, Buried or Aerial plant favorable to the topology of the OSP area being constructed. This plant mix table allows the user to input their company specific percentages of plant mix used in their selected study area.

5.2 Copper Plant Mix Table [CopperNormMixTable]

5.2.1 Definition

This table represents the percentages, by density, when facility placement [Copper] occurs in Normal Terrain situations for Underground, Buried and Aerial. Generally, in low densities there is a greater percent of Buried plant than Underground, and conversely, in higher densities more Underground than Buried plant.

5.2.2 Suggested Input Value

The following table is applied when copper facilities are being placed in Normal Terrain conditions for a given density. There are two input fields available to the user: Underground Percent and Buried Percent. The Aerial Percent is calculated upon entering the other two percentages.

The Model algorithms, in the Loop.xls module, use these percentages in determining Percent Drop Aerial, Aerial Copper Distance, Buried Distance, Underground Distance and Aerial cable Distance. The percentage adjusts the material and structure costs, for the plant mix selected, and used in calculating the Term, Drop and NID, Subfeeder Part2, Main Feeder, and Subfeeder, segments of the OSP facilities

There are nine density zones designed in BCPM. The model sponsors were asked to make inputs available for each of the density groups.

5.2.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of The LEC engineering Team subject matter experts.

5.2.4 Rationale

Based on where the company builds their OSP facilities determines the percentage for the type of plant to be deployed. Thereby, resulting in specific percentages of Underground, Buried or Aerial plant favorable to the topology of the OSP area being constructed. This plant mix table allows the user to input their company specific percentages of plant mix used in their selected study area.

5.3 Copper Plant Mix Table [CopperSoftMixTable]

5.3.1 Definition

This table represents the percentages, by density, when facility placement [Copper] occurs in Soft Rock Terrain situations for Underground, Buried and Aerial. Generally, in low densities there is a greater percent of Buried plant than Underground, and conversely, in higher densities more UnderGround than Buried plant.

5.3.2 Suggested Input Value

The following table is applied when copper facilities are being placed in Soft Rock Terrain conditions for a given density. There are two input fields available to the user: Underground Percent and Buried Percent. The Aerial Percent is calculated upon entering the other two percentages.

The Model algorithms, in the Loop.xls module, use these percentages in determining Percent Drop Aerial, Aerial Copper Distance, Buried Distance, Underground Distance and Aerial cable Distance. The percentage adjusts the material and structure costs, for the plant mix selected, and used in calculating the Term, Drop and NID, and Subfeeder Part2 segments of the OSP facilities

There are nine density zones designed in BCPM. The model sponsors were asked to make inputs available for each of the density groups.

5.3.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of The LEC engineering Team subject matter experts.

5.3.4 Rationale

Based on where the company builds their OSP facilities determines the percentage for the type of plant to be deployed. Thereby, resulting in specific percentages of Underground, Buried or Aerial plant favorable to the topology of the OSP area being constructed. This

plant mix table allows the user to input their company specific percentages of plant mix used in their selected study area.

5.4 Density Cable Sizing Factor Table [DensityFillTable]

5.4.1 Definition

The Density Cable Sizing Factor Table reflects an optimal fill that would be expected for a cable serving a known number of subscribers with little, if any, growth. There is some excess capacity for administration and breakage. The less dense areas reflect a somewhat lower fill as a result of travel and the higher expected cost of re-enforcement as the predominant type of plant is buried. Distribution fills are generally higher due to the amount of Underground and/or Buried plant and the risk of re-enforcement where established landscaping is the rule.

5.4.2 Suggested Input Value

The following table applies to the percent fill expected or the Feeder or Distribution plant facility for a given density. There are two input fields available to the user, Feeder and Distribution.

The Model algorithms, in the Loop.xls module, use these cable-sizing factors diversely. Foremost, Feeder fill factor determines the GRID plant type, based on the BreakPoint in the distance calculations. In turn, this factor also determines the number of pairs required in each quadrant based on working pairs for the Digital Loop Carrier to Feeder Distribution Interface segments of the plant. Furthermore, the Feeder fill factor determines the Subfeeder copper pairs per GRID, the Subfeeder Part2 size of copper, and the working pairs from the Subfeeder, the fibers needed, and the copper pairs needed for the Main Feeder segments of the OSP plant.

For the Distribution fill factor, this is used to determine the pairs per branch cables for all quadrants in order to properly size the cable leading back to the back bone cable and FDI.

There are nine density zones designed in BCPM. The model sponsors were asked to make inputs available for each of the density groups.

5.4.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of The LEC engineering Team subject matter experts.

5.4.4 Rationale

Allows the user to place company specific inputs in order to optimize the cable fill and design the most efficient plant possible based on specific study areas.

5.5 Density House Hold Table [DensityHhTable]

5.5.1 Definition

This table determines the mix of single family and multi-family dwelling units by density group. There are nine density groups within BCPM. The table also contains the average number of units in each multi-family dwelling unit by density group.

5.5.2 Suggested Input Value

There are two input fields available to the user: Percent Single Family and Per Multi-unit Dwelling. The other two columns, Percent Multi-Family Dwellings and Lots per HouseHold are calculated off the user adjustable inputs. Taking 1 minus the Percent Single Family derives the Percent Mult-Family Dwellings. Taking the Percent Single Family plus Percent Multi-Family dividend by Multi-Unit Dwellings derives the Lots per HouseHold.

5.5.3 Source

The default values were derived from the census bureau national survey of housing characteristics. To deviate from the census data new inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of The LEC engineering Team subject matter experts.

5.5.4 Rationale

The table is used to determine an accurate size and mix of drop, NID, and terminal investments.

5.6 Distribution Plant Mix Table [DistriHardMixTable]

5.6.1 Definition

This table represents the percentages, by density, when facility placement [Distribution] occurs in Hard Rock Terrain situations for Underground, Buried and Aerial. Generally, in low densities there is a greater percent of Buried plant than Underground, and conversely, in higher densities more UnderGround than Buried plant.

5.6.2 Suggested Input Value

The following table is applied when Distribution facilities are being placed in Hard Rock Terrain conditions for a given density. There are two input fields available to the user: Underground Percent and Buried Percent. The Aerial Percent is calculated upon entering the other two percentages.

The Model algorithms, in the Loop.xls module, use these percentages in determining Aerial, Buried or Underground Distances for branch and backbone, and DLC to FDI cables in all quadrants. The percentage adjusts the material and structure costs as well as the allocation of FDI, for the plant mix selected, and is used in calculating the New Distribution, DLC to FDI and Electronic and FDI segments of the OSP facilities

There are nine density zones designed in BCPM. The model sponsors were asked to make inputs available for each of the density groups.

5.6.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of The LEC engineering Team subject matter experts.

5.6.4 Rationale

Based on where the company builds their OSP facilities determines the percentage for the type of plant to be deployed. Thereby, resulting in specific percentages of Underground, Buried or Aerial plant favorable to the topology of the OSP area being constructed. This plant mix table allows the user to input their company specific percentages of plant mix used in their selected study area.

5.7 Distribution Plant Mix Table [DistriNormMixTable]

5.7.1 Definition

This table represents the percentages, by density, when facility placement [Distribution] occurs in Normal Terrain situations for Underground, Buried and Aerial. Generally, in low densities there is a greater percent of Buried plant than Underground, and conversely, in higher densities more UnderGround than Buried plant.

5.7.2 Suggested Input Value

The following table is applied when Distribution facilities are being placed in Normal Terrain conditions for a given density. There are two input fields available to the user:

Underground Percent and Buried Percent. The Aerial Percent is calculated upon entering the other two percentages.

The Model algorithms, in the Loop.xls module, use these percentages in determining Aerial, Buried or Underground Distances for branch and backbone, and DLC to FDI cables in all quadrants. The percentage adjusts the material and structure costs as well as the allocation of FDI, for the plant mix selected, and is used in calculating the New Distribution, DLC to FDI and Electronic and FDI segments of the OSP facilities

There are nine density zones designed in BCPM. The model sponsors were asked to make inputs available for each of the density groups.

5.7.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of The LEC engineering Team subject matter experts.

5.7.4 Rationale

Based on where the company builds their OSP facilities determines the percentage for the type of plant to be deployed. Thereby, resulting in specific percentages of Underground, Buried or Aerial plant favorable to the topology of the OSP area being constructed. This plant mix table allows the user to input their company specific percentages of plant mix used in their selected study area.

5.8 Distribution Plane Mix Table [DistriSoftMixTable]

5.8.1 Definition

This table represents the percentages, by density, when facility placement [Distribution] occurs in Soft Rock Terrain situations for Underground, Buried and Aerial. Generally, in low densities there is a greater percent of Buried plant than Underground, and conversely, in higher densities more UnderGround than Buried plant.

5.8.2 Suggested Input Value

The following table is applied when Distribution facilities are being placed in Soft Rock Terrain conditions for a given density. There are two input fields available to the user: Underground Percent and Buried Percent. The Aerial Percent is calculated upon entering the other two percentages.

The Model algorithms, in the Loop.xls module, use these percentages in determining Aerial, Buried or Underground Distances for branch and backbone, and DLC to FDI cables in all quadrants. The percentage adjusts the material and structure costs as well as

the allocation of FDI, for the plant mix selected, and is used in calculating the New Distribution, DLC to FDI and Electronic and FDI segments of the OSP facilities

There are nine density zones designed in BCPM. The model sponsors were asked to make inputs available for each of the density groups.

5.8.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of The LEC engineering Team subject matter experts.

5.8.4 Rationale

Based on where the company builds their OSP facilities determines the percentage for the type of plant to be deployed. Thereby, resulting in specific percentages of Underground, Buried or Aerial plant favorable to the topology of the OSP area being constructed. This plant mix table allows the user to input their company specific percentages of plant mix used in their selected study area.

5.9 Fiber Plant Mix Table (Loop) [FbrLoopHardMixTable]

5.9.1 Definition

This table represents the percentages, by density, when facility placement [Fiber] occurs in Hard Rock Terrain situations for Underground, Buried and Aerial. Generally, in low densities there is a greater percent of Buried plant than Underground, and conversely, in higher densities more UnderGround than Buried plant.

5.9.2 Suggested Input Value

The following table is applied when fiber facilities are being placed in Hard Rock Terrain conditions for a given density. There are two input fields available to the user: Underground Percent and Buried Percent. The Aerial Percent is calculated upon entering the other two percentages.

The Model algorithms, in the Loop.xls module, use these percentages in determining, Part2 Aerial Fiber Distance, Part2 Buried Fiber Distance, and Part2 Underground Fiber Distance. The percentage adjusts the material and structure costs, for the plant mix selected, and used in calculating Subfeeder Part2 segments of the OSP facilities

There are nine density zones designed in BCPM. The model sponsors were asked to make inputs available for each of the density groups.

5.9.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of The LEC engineering Team subject matter experts.

5.9.4 Rationale

Based on where the company builds their OSP facilities determines the percentage for the type of plant to be deployed. Thereby, resulting in specific percentages of Underground, Buried or Aerial plant favorable to the topology of the OSP area being constructed. This plant mix table allows the user to input their company specific percentages of plant mix used in their selected study area.

5.10 Fiber Plant Mix Table (Loop) [FbrLoopNormMixTable]

5.10.1 Definition

This table represents the percentages, by density, when facility placement [Fiber] occurs in Normal Terrain situations for Underground, Buried and Aerial. Generally, in low densities there is a greater percent of Buried plant than Underground, and conversely, in higher densities more UnderGround than Buried plant.

5.10.2 Suggested Input Value

The following table is applied when fiber facilities are being placed in Normal Terrain conditions for a given density. There are two input fields available to the user: Underground Percent and Buried Percent. The Aerial Percent is calculated upon entering the other two percentages.

The Model algorithms, in the Loop.xls module, use these percentages in determining, Part2 Aerial Fiber Distance, Part2 Buried Fiber Distance, and Part2 Underground Fiber Distance. The percentage adjusts the material and structure costs, including ducts and manholes for Main Feeder, and manholes for Subfeeder plant mixes selected, which are used in calculating Subfeeder Part2, Subfeeder and Main Feeder segments of the OSP facilities

There are nine density zones designed in BCPM. The model sponsors were asked to make inputs available for each of the density groups.

5.10.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and

represent the judgment and experience of The LEC engineering Team subject matter experts.

5.10.4 Rationale

Based on where the company builds their OSP facilities determines the percentage for the type of plant to be deployed. Thereby, resulting in specific percentages of Underground, Buried or Aerial plant favorable to the topology of the OSP area being constructed. This plant mix table allows the user to input their company specific percentages of plant mix used in their selected study area.

5.11 Fiber Plant Mix Table (Loop) [FbrLoopSoftMixTable]

5.11.1 Definition

This table represents the percentages, by density, when facility placement [Fiber] occurs in Soft Rock Terrain situations for Underground, Buried and Aerial. Generally, in low densities there is a greater percent of Buried plant than Underground, and conversely, in higher densities more UnderGround than Buried plant.

5.11.2 Suggested Input Value

The following table is applied when fiber facilities are being placed in Soft Rock Terrain conditions for a given density. There are two input fields available to the user: Underground Percent and Buried Percent. The Aerial Percent is calculated upon entering the other two percentages.

The Model algorithms, in the Loop.xls module, use these percentages in determining, Part2 Aerial Fiber Distance, Part2 Buried Fiber Distance, and Part2 Underground Fiber Distance. The percentage adjusts the material and structure costs, for the plant mix selected, and used in calculating Subfeeder Part2 segments of the OSP facilities

There are nine density zones designed in BCPM. The model sponsors were asked to make inputs available for each of the density groups.

5.11.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of The LEC engineering Team subject matter experts.

5.11.4 Rationale

Based on where the company builds their OSP facilities determines the percentage for the type of plant to be deployed. Thereby, resulting in specific percentages of Underground, Buried or Aerial plant favorable to the topology of the OSP area being constructed. This

plant mix table allows the user to input their company specific percentages of plant mix used in their selected study area.

5.12 Fiber Plant Mix Table (Transport) [FbrTransHardMixTable]

5.12.1 Definition

(Documentation under development, presently not being used in BCPM)

5.12.2 Suggested Input Value

5.12.3 Source

5.12.4 Rationale

5.13 Fiber Plant Mix Table (Transport) [FbrTransNormMixTable]

5.13.1 Definition

(Documentation under development, presently not being used in BCPM)

5.13.2 Suggested Input Value

5.13.3 Source

5.13.4 Rationale

5.14 Fiber Plant Mix Table (Transport) [FbrTransSoftMixTable]

5.14.1 Definition

(Documentation under development, presently not being used in BCPM)

5.14.2 Suggested Input Value

5.14.3 Source

5.14.4 Rationale

5.15 Average Number of Housing Units per Dwelling [HousingUnitsPerDwelling]

5.15.1 Definition

This table reflects the census data on the number of dwellings. The data is resident in the respective Base_Loop3_ETRS.csv files for each of the states. The ETRS input file shows the number of dwelling for each Grid within that state and is used in the Loop.xls modules during processing.

5.15.2 Suggested Input Value

The table consists of 10 columns. Column one reflects the Units per Dwelling or the number of livable units per dwelling [building] defined by the Census Bureau and reflects the count of dwellings in the given ranges. The remaining nine columns represent the nine density zones in BCPM. Within these nine columns are the user adjustable inputs that represents the average number of occupied Households in a dwelling. These inputs should be representative of the company's occupied dwellings for each of their respective serving areas being studied.

The Model algorithms, in the Loop.xls module, load the census data from the respective states Base_Loop3_ETRS.csv file in to the Grid data. This data is then used in Grid Demographics to determine the required cost of Term, Drop and NIDs for each of the designated unit per dwelling for all quadrants.

5.15.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of The LEC engineering Team subject matter experts.

5.15.4 Rationale

Allows the user to adjust for specific multi-dwelling units to ensure proper sizing and cost for Terminals, Drops, and NIDs.

5.16 Structure Allocation Table [Over4200]

5.16.1 Definition

This table determines the allocation of structure costs (trench, poles) between copper and fiber facilities when both are present.

5.16.2 Suggested Input Value

The following table is applied when copper and fiber facilities are being placed for a given density. There is one input field available to the user, Cable Structure Percent. The Fiber Structure Percent is calculated as 1 minus the Cable Structure Percent.

The Model algorithms, in the Loop.xls module, use these percentages in determining the structure costs in the Main Feeder and Subfeeder OSP segments for UnderGround, Buried and Aerial copper. The percentage of structure assigned to the facilities is based on the number of copper and fiber pairs needed in the Subfeeder and Main Feeder segments of the OSP facilities. For example, if the total copper Main Feeder require 7355 pairs a 4200 pair cable is configured with the residual Main Feeder size calculated as 3600 pair cable. The structure allocation would then be based on the percentage for that cable size greater than 4200 pairs. Conversely, if the total copper Main Feeder require 3913 pairs, the structure allocation would then utilize the percentages that is based on a cable size of 4200 pairs

There are six cable sizes allocated in this table, zero, 200, 900, 2400, 4200, and greater than 4200. The model sponsors were asked to make inputs available for each of the cable sizes.

5.16.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of The LEC engineering Team subject matter experts.

5.16.4 Rationale

To allocate the proper cable sizes between copper and fiber.

5.17 Structure Allocation Table StructureAllocationTable]

5.17.1 Definition

This table determines the allocation of structure costs (trench, poles) between copper and fiber facilities when both are present.

5.17.2 Suggested Input Value

The following table is applied when copper and fiber facilities are being placed for a given density. There is one input field available to the user, Cable Structure Percent. The Fiber Structure Percent is calculated as 1 minus the Cable Structure Percent.

The Model algorithms, in the Loop.xls module, use these percentages in determining the structure costs for Main Feeder and Subfeeder OSP segments for UnderGround, Buried and Aerial copper. The percentage of structure assigned to the facilities is based on the number of copper and fiber pairs needed in the Subfeeder and Main Feeder segments of the OSP facilities. For example, if the total copper Main Feeder require 7355 pairs a 4200 pair cable is configured with the residual Main Feeder size calculated as 3600 pair cable. The structure allocation would then be based on the percentage for that cable size

greater than 4200 pairs. Conversely, if the total copper Main Feeder require 3913 pairs, the structure allocation would then utilize the percentages that is based on a cable size of 4200 pairs

There are six cable sizes allocated in this table, zero, 200, 900, 2400, 4200, and greater than 4200. The model sponsors were asked to make inputs available for each of the cable sizes.

5.17.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of The LEC engineering Team subject matter experts.

5.17.4 Rationale

To allocate the proper cable sizes between copper and fiber.

5.18 Voice Grade Ratio Table [VoiceGradeRatioTable]

5.18.1 Definition

This table is used to determine the percent of switched voice grade lines that are terminated in a CBG or grid at a digital PBX via DS1 facilities. The table is also used to determine the percent of private line voice grade channels that are terminated at the DS1 level at the customer premise. The Number Switched Lines in CBG range from zero to 20,000. The reason for a smaller percent of voice grade lines in the highest range constitutes the fact that in urban areas businesses in large office complexes deploy extensive use of DS1 levels of service. The zero to 2017 number of switched lines generally constitute a rural environment, while 10,000 switched lines represents a suburban environment where a small percentage of businesses deploy DS1 levels of service.

5.18.2 Suggested Input Value

The following table is applied when copper and fiber facilities are being placed for a given density. There are two input fields available to the user, Percent Switched to Voice Grade [VG] and Percent Special to Voice Grade [VG]. The Percent Switched and Special to DS1 columns are calculated by taking 1 minus the respective voice grade percentage.

The Model algorithms, in the Loop.xls module, use this percentage in determining Grid or CBG lines provisioned as DS1's and the number of voice grade lines equipped at the DLC terminals.

5.18.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of The LEC engineering Team subject matter experts.

5.18.4 Rationale

To determine the percent of switched voice grade lines that are terminated in a CBG or grid at a digital PBX via DS1 facilities

6 *DLC & Electronic Inputs*

The DLC placement in BCPM uses Integrated Digital Loop Carrier technology for both the large and small systems. This technology eliminates many of the costs associated with standard or “universal” systems. Sizes of DLC systems in BCPM range from 24 to 2016 channels. This allows the flexibility and the economics of deploying sizes based on density and growth. Given engineering fill factor of 90%, a small DLC would be less than 216 lines i.e. 240 times 90%. Large DLCs are greater than 240 lines. Defaults are provided for the convenience of users who may not have access to more specific data.

6.1 Digital Carrier Remote System Cost Table

6.1.1 Definition

These cost reflect the fixed costs for the DLC remote end for the system and the Per Line Cost or variable. A minimum variable cost for the Voice Grade [VG] line cards is required for pricing out Universal Service [USF]. The remaining eight Per Line Cost columns reflect inputs that are used for Unbundled Network Elements [UNE] pricing. Reference Section 7.41 and 7.42 Miscellaneous Inputs on per line card cost for Extended Range line cards.

6.1.2 Default Input Value

There are ten COST input fields available to the user. Fixed Cost All, VG, ISDN, DS1, DDS, 4W, EBS, COIN, ADSL and HDSL. The Fixed Cost All assumes all installed first costs associated with the placement of DLC systems at the remote end. The cost includes common equipment, site preparation, right-of-way cost, remote cabinets, commercial power, protection, fiber optic terminal (FOT), taxes, engineering and installation costs. The Per Line Cost is the installed cost of line cards on a per line basis [installed cost of line cards divided by 6 services per line card at the Remote Terminal]. The first column DLC Fiber Size represents the number of lines for a given system. For Example; If the Model calculates that a CSA has 106 DLC lines the cost for that DLC will be priced out at a Remote system size of 121 lines.

6.1.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of the LEC engineering Team subject matter experts.

6.1.4 Rationale

Allows the user to input their company DLC cost requirements on a company-specific basis.

6.2 DLC COT Investment Table

6.2.1 Definition

These reflect the fixed costs for integrate type DLC central office end systems. No line cards are installed. However, Reference Section 7.10 and 7.12 Miscellaneous Inputs on per line card cost for COT Extended Range line cards.

6.2.2. Suggested Input Value

There is one COST input field available to the user. Fixed Cost. The Fixed Cost assumes all installed first costs associated with the placement of DLC systems at the central office end. The cost includes common equipment, power, central office fiber optic terminal (COT/FOT), taxes, engineering and installation costs. The first column DLC Fiber Size represents the number of lines for a given system. For Example; If the Model calculates that the central office end requires 106 DLC lines from the remote sites the cost for that DLC will be priced out at a size of 121 lines.

6.2.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of The LEC engineering Team subject matter experts.

6.2.4 Rationale

Allows the user to input their company DLC cost requirements on a company-specific basis.

7 Miscellaneous Inputs

Miscellaneous inputs in the BCPM Model encompass other data such as Financial and Tax. However, this section only addresses those miscellaneous inputs related with Loop.

7.1 Break Point [BreakPoint]

7.1.1 Definition

This input sets the break point for total loop distance (wire center to subscriber) at which the Model changes from copper cable to fiber. The 12,000 feet default is designed to allow for provisioning of services up to and including DS1. This also means that copper will be the transport medium from the wire center to the subscriber when the total loop length is 12,000 feet or less. Loop lengths beyond 12,000 feet fiber will be deployed in the feeder along with digital loop carrier.

7.1.2 Default Input Value

BreakPoint
12,000

The user has five valid selections to choose from on a pull down menu to set their own break point for sensitivity analysis. Break points available to the user are 6000, 9000, 12000, 15000, and 18000 feet; with the default listed above. To extend the breakpoint, a user must assume a 26/24-gauge feeder and adjust cable cost accordingly. In addition, cost for load coils and other transmission requirements must be taken into consideration when extending copper loop lengths. NOTE: It is not recommended to use load coils as they impair the ability to offer enhanced services over their copper plant facilities.

7.1.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The 12,000 feet default is based on CSA design criteria from the Lucent Technologies outside plant engineering handbook or comparable practices used by all LECs to build the loop network.

7.1.4 Rationale

Allows the user to input their company specific break point used in placing plant and perform sensitivity analysis.

7.2 Break Point Extended Range [BreakPointExRange]

7.2.1 Definition

This input sets break point for loop distance (wire center to subscriber) which exceed 13,600 feet. Those distances exceeding the 13,600 break point feet of loop plant deploys extended range line cards in the DLC systems.

7.2.2 Default Input Value

BreakPointExRange

13,600

7.2.3 Source

This footage represents the maximum loop loss allowable before using extended range line cards in the systems. It is taken from the electrical characteristics of 24-gauge cable.

7.2.4 Rationale

Sets the break point that triggers the use of extended range line cards in DLC system, allowing for longer loops that will handle enhanced services.

7.3 Business Premise [BusinessPrem]

7.3.1 Definition

This input is census data, state specific, and allows the user to adjust the minimum number of business lines per location.

7.3.2 Default Input Value

BusinessPrem
10

7.3.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of The LEC engineering Team subject matter experts.

7.3.4 Rationale

Allows the user to enter their state specific average number of business lines per location. Whereby, the number of business premises will vary by state by location as dictated by the census data.

7.4 Combination Slope Factor [CombSlopeFactor]

7.4.1 Definition

Slope triggers are set at the present slope when facilities must be placed along the contours of the hillside rather than in a point-to-point placement. Slope factors are the multipliers used to add the additional distance that the facilities must travel as they wind

their way across the higher slope terrain. This factor is a secondary change and comes in to play when both the minimum and maximum slope triggers are exceeded the distance is adjusted by the combined slope factor. NOTE: The minimum slope factor of 1.10 and maximum slope factors of 1.05 will never add to the combined slope factor of 1.20. Reason being; if either one of the minimum or maximum factors, based on the predominate slope in the given terrain is reached, neither slope factor is used and the combination slope factor is deployed.

7.4.2 Default Input Value

CombSlopeFactor
1.20

7.4.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of The LEC engineering Team subject matter experts.

7.4.4 Rationale

Since more cable is required when winding along contours of hillsides rather than cable placement in straight flat terrain, this input allows for the additional distance that facilities will require when traveling along this higher sloped terrain. Thereby, triggering the Model to compensate cable and structure costs.

7.5 Copper Cable Discount

7.5.1 Definition

This miscellaneous input is set at zero percent as discounts are already applied to the copper cable data. To apply additional discounts to cable in this table, a user should adjust the total amount of the discount to account for the inclusion of labor in the cable cost tables Section 1.0 of this manual.

7.5.2 Default Input Value

CopperCableDiscount
0.00%

7.5.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of The LEC engineering Team subject matter experts. **Discounts are set to zero if the cable prices already reflect the appropriate discounts.**

7.5.4 Rationale

Allows the user to adjust for additional cable discounts for their company specific cable costs.

7.6 Copper Cost Ratio

7.6.1 Definition

This miscellaneous input is calculated based on the users setting for CopperCableDiscount Section 7.5. The value is computed by taking 1 minus the CopperCableDiscount value, and represents the copper cable cost after the discount. The ratio is used in costing out the buried and aerial copper plant that the Model estimates in the Subfeeder Part 2, New Distribution, DLC to DI, Main Feeder and Subfeeder facilities.

7.6.2 Default Input Value

CopperCostRatio
100.00%

7.6.3 Source

Not Applicable

7.6.4 Rationale

Discounts are set to zero if the cable prices already reflect the appropriate discounts.

7.7 Copper Gauge

7.7.1 Definition

In order to provide adequate transmission capacities for fax and dial-up modems, BCPM, along with loop length and break point defaults, BCPM uses 26 gauge in the feeder and 26/24 gauge in the distribution. This is a calculated value in the inputs based on the breakpoint setting. For example; if breakpoint in less than 12,000 feet 26 gauge is used otherwise, 24 for gauge is deployed.

7.7.2 Default Input Value

CopperGauge
26

7.7.3 Source

These inputs are based on CSA design and copper cable resistance criteria.

7.7.4 Rationale

Input is based on cable resistance for 26 gauge cable and the normal CSA design.

7.8 Copper T-1

7.8.1 Definition

This input is the average cost per DS1 on copper (both terminals and one repeater). The table provides the cost of electronics for terminating private line and digital PBX services at the DS1 signal level.

7.8.2 Default Input Value

CopperT1
\$2,500.00

7.8.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of The LEC engineering Team subject matter experts.

7.8.4 Rationale

Used for the provision of non-voice grade services over copper.

7.9 COT DLC Large Per Line Investment [COTDLCLPerLine]

7.9.1 Definition

This input defines the cost per line investment for the Central Office Terminal used in calculating of large electronic costs in the Loop.xls module. The default per line cost represents several DLC vendors such as RELTEC and DSC. The value is derived by dividing the cost of a DS1 card by 24; the number of circuits on one card.

7.9.2 Default Input Value

COTDLCLPerLine
\$15.58

7.9.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of The LEC engineering Team subject matter experts.

7.9.4 Rationale

Provide the user the ability to place company specific per line cost for large DLC units.

7.10 COT DLC Large Per Line Investment Extended Range **[COTDLCLPerLineExRange]**

7.10.1 Definition

This input defines the cost per line investment for the Central Office Terminal used in calculating of large electronic costs in the Loop.xls module. The default per line cost represents several DLC vendors such as RELTEC and DSC. The value is derived by dividing the cost of a DS1 card by 24; the number of circuits on one DS1 card. DS1 cards are deployed at the COT end since the DLC units are configured as an integrated system.

7.10.2 Default Input Value

COTDLCLExRange
\$15.58

7.10.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgement and experience of The LEC engineering Team subject matter experts.

7.10.4 Rationale

Provides the user the ability to place company specific per line cost for large DLC units with DS1 cards that allow for longer loops and retain the ability to offer advanced services in a forward looking network.

7.11 COT DLC Small Per Line Investment [COTDLCSPerLine]

7.11.1 Definition

This input defines the cost per line investment for the Central Office Terminal used in calculating of large electronic costs in the Loop.xls module. The default per line cost represents several DLC vendors such as AFC and NEC. The value is derived by dividing the cost of a DS1 card by 24; the number of circuits on one DS1 card. DS1 cards are deployed at the COT end since the DLC units are configured as an integrated system.

7.11.2 Default Input Value

COTDLCSPerLine
\$18.54

7.11.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of The LEC engineering Team subject matter experts.

7.11.4 Rationale

Provides the user the ability to place company specific per line cost for large DLC units with DS1 cards that allow for longer loops and retain the ability to offer advanced services in a forward looking network

7.12 COT DLC Small Per Line Investment Extended Range [COTDLCSPerLineExRange]

7.12.1 Definition

This input defines the cost per line investment for the Central Office Terminal used in calculating of large electronic costs in the Loop.xls module. The default per line cost represents several DLC vendors such as AFC and NEC. The value is derived by dividing the cost of a DS1 card by 24; the number of circuits on one DS1 card. DS1 cards are deployed at the COT end since the DLC units are configured as an integrated system.

7.12.2 Default Input Value

COTDLCSPerLineExRange
\$18.54

7.12.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of The LEC engineering Team subject matter experts.

7.12.4 Rationale

Provides the user the ability to place company specific per line cost for large DLC units with line cards that allow for longer loops and retain the ability to offer advanced services in a forward looking network

7.13 Copper Maximum Distribution Length [CprMaxDistr]

7.13.1 Definition

In order to design a least cost network that provides adequate transmission capabilities for fax and dial-up modems, BCPM designs an outside plant system that typically maximizes loop lengths for copper using 26 gauge copper. The engineering protocols most central to the design of this model include an average maximum loop length for each CSA that is less than 12,000 feet for both feeder and distribution. This value eliminates problems arising from loading and resistance. NOTE: In changing this value the breakpoint value should equal this value to ensure adequate results in plant design.

7.13.2 Default Input Value

CprMaxDistr
12,000

7.13.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of The LEC engineering Team subject matter experts.

7.13.4 Rationale

To eliminate the use of load calls within the forward looking network which impairs the deployment of advanced services and remain in compliance with the Standards set in the AT&T/Lucent and US practices covering loop resistance and electrical db loss.

7.14 Critical Water Depth

7.14.1 Definition

This input is the depth, in feet, at which water impacts placement costs. If the water table depth is equal to or less than the critical water depth, the water multiplier factor activates and a percent cost increase is applied for cable placement.

7.14.2 Default Input Value

CriticalWaterDepth
3

7.14.3 Source

The source is taken from the State Soil Geography (STATSGO) data based produced by the United States Department of Agriculture.

7.14.4 Rationale

As the water table decreases in depth placing cable becomes more costly. This input sets the trigger at which additional cost for placing cable is required due to lower water tables.

7.15 D 4 Bank

7.15.1 Definition

This input represents the material and installation for a standard D4 channel bank common equipment.

7.15.2 Default Input Value

D4Bank
-

7.15.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of The LEC engineering Team subject matter experts.

7.15.4 Rationale

This input allows the user to input their company specific D4 Channel Bank cost.

7.16 DLC Large Discount [DLCLDiscount]

7.16.1 Definition

This miscellaneous input is calculated based on the users setting for Large DLC Electronic Discount Section 7.24. The value is computed by taking 1 minus the Large DLC Electronic Discount value, and represents the DLC large cost after the discount. The ratio is used in costing out large DLC systems, which the Model required to price out the network.

7.16.2 Default Input Value

DLCLdiscount
100.00%

7.16.3 Source

Not Applicable

7.16.4 Rationale

Discounts are set to zero if the DLC prices already reflect the appropriate discounts.

7.17 DLC Small Discount [DLCSDiscount]

7.17.1 Definition

This miscellaneous input is calculated based on the users setting for Small DLC Electronic Discount Section 7.43. The value is computed by taking 1 minus the Large DLC Electronic Discount value, and represents the DLC small cost after the discount. The ratio is used in costing out the small DLC system that the Model required to price out the network.

7.17.2 Default Input Value

DLCSDiscount
100.00%

7.17.3 Source

Not Applicable

7.17.4 Rationale

Discounts are set to zero if the DLC prices already reflect the appropriate discounts.

7.18 Electronic Fill

7.18.1 Definition

This input represents the percent of line cards to be engineered for a given DLC system. The Model allows for two DLC categories, each providing multiple size options of remote and central office terminal sizes. The decision to use either a small or large DLC is based on the number of lines the DLC can serve. For example, given an electronic fill factor of 85 percent, a small DLC would be placed if the CSA serves less than 204 lines, i.e. 240 times 85%. It is designed to allow for growth that applies to the line cards in the channel units.

7.18.2 Default Input Value

ElectronicFill
85.00%

7.18.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of The LEC engineering Team subject matter experts

7.18.4 Rationale

Allows the user to adjust their company specific fill factor for electronics based on their company guidelines and serving area being studied.

7.19 Fiber Terminal Frame [FbrTermFrame]

7.19.1 Definition

This miscellaneous input the material and installation for one Fiber Termination frame at the central office end when pricing out Unbundled Network Elements [UNEs].

7.19.2 Default Input Value

FbrTermFrame
-

7.19.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of The LEC engineering Team subject matter experts

7.19.4 Rationale

Allows the user to enter company specific material and installation costs for fiber termination equipment used primarily with pricing Unbundled Network Elements [UNEs].

7.20 Fiber Cable Discount

7.20.1 Definition

This miscellaneous input is set at zero percent as discounts are already applied to the fiber cable data. To apply additional discounts to cable in this table, a user should adjust the total amount of the discount to account for the inclusion of labor in the cable cost tables Section 1.0 of this manual.

7.20.2 Default Input Value

FiberCableDiscount
0.00%

7.20.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of The LEC engineering Team subject matter experts. Discounts are set to zero if the cable prices already reflect the appropriate discounts

7.20.4 Rationale

Allows the user to adjust for additional cable discounts for their company specific cable costs.

7.21 Fiber Cost Ratio

7.21.1 Definition

This miscellaneous input is calculated based on the users setting for FiberCableDiscount Section 7.20. The value is computed by taking 1 minus the FiberCableDiscount value, and represents the fiber cable cost after the discount. The ratio is used in costing out the underground, buried and aerial fiber plant that the Model estimates in the Subfeeder Part 2, Main Feeder and Subfeeder .

7.21.2 Default Input Value

FiberCostRatio
100.00%

7.21.3 Source

Not Applicable

7.21.4 Rationale

Discounts are set to zero if the cable prices already reflect the appropriate discounts.

7.22 Hi Capacity Fill [HiCapFill]

7.22.1 Definition

(Documentation under development)

7.22.2 Default Input Value

HiCapFill
95.00%

7.22.3 Source

7.22.4 Rationale

7.23 Investment Loop Cap Expense [InvLoopCap]

7.23.1 Definition

This input on investment loop cap can be evaluated at a national or wire center level and provides user the ability to perform sensitivity analysis. For example, if the user sets a cap at the default value, each loop whose investment potentially exceeds \$10,000 is capped at \$10,000. This is also designed to give the user a technology substitute for a technology not currently in the model such as wireless. Use of the cap assumes the alternative technology is available at the cap price or lower.

7.23.2 Default Input Value

InvLoopCap
10,000

7.23.3 Source

A user based adjustment available for wireless or other technology alternatives at the present time.

7.23.4 Rationale

Provides the Modeler the option of establishing a cap on the maximum loop investment. Reason being 1) a possibility that regulatory/public policy may limit the maximum investment level per line that USF can support and 2) for technological alternatives for providing basic service beyond some user specified investment threshold.

7.24 Large DLC Electronic Discount [LargeDLCDiscount]

7.24.1 Definition

This miscellaneous input is set at zero percent as discounts are already applied to the DLC and electronic cost data. To apply additional discounts to DLC investment in this table, a user should adjust the total amount of the discount to account for the inclusion of vendor material discounts in the DLC cost tables Section 6.0 of this manual.

7.24.2 Default Input Value

LargeDLCDiscount
0.00%

7.24.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of The LEC engineering Team subject matter experts. **Discounts are set to zero if the DLC prices already reflect the appropriate discounts**

7.24.4 Rationale

Allows the user to adjust for additional DLC discounts for their company specific Digital Loop Carrier costs.

7.25 Maximum COT DLC Large [MaxCOTDLCL]

7.25.1 Definition

The maximum DLC Large Central Office Terminal the user wishes considered in the model. The value of this input must coincide with a DLC size from the DLC &

Electronic Input tables in Section 6.0. NOTE: The maximum line capacity for a large DLC system is 2016.

7.25.2 Default Input Value

MaxCOTDLCL
2016

7.25.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for those cable sizes the company utilizes under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of The LEC engineering Team subject matter experts

7.25.3 Rationale

Based on vendor design of their Digital Carrier Loop systems.

7.26 Maximum COT DLC Small [MaxCOTDLCS]

7.26.1 Definition

The maximum DLC Small Central Office Terminal the user wishes considered in the model. The value of this input must coincide with a DLC size from the DLC & Electronic Input tables in Section 6.0. NOTE: The maximum line capacity for a small DLC before deploying a large DLC system is 672.

7.26.2 Default Input Value

MaxCOTDLCS
672

7.26.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for those cable sizes the company utilizes under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of The LEC engineering Team subject matter experts

7.26.4 Rationale

Based on vendor design of their Digital Carrier Loop systems.

7.27 Maximum Copper Feeder Cable Size [MaxFeederSize]

7.27.1 Definition

The maximum copper feeder cable size the user wishes considered in the model. The value of this input must coincide with a cable size from the cable cost input table in Section 1.0 "Loop Cost Inputs." NOTE: the largest copper cable size supported by the Model is 4200 pairs.

7.27.2 Default Input Value

MaxFeederSize
4200

7.27.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for those cable sizes the company utilizes under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of The LEC engineering Team subject matter experts

7.27.4 Rationale

7.28 Maximum Fiber Cable Size [MaxFiberSize]

7.28.1 Definition

The maximum fiber feeder cable size the user wishes considered in the model. The value of this input must coincide with a cable size from the cable cost input table. NOTE: the largest fiber cable size supported by the Model is 288 strands.

7.28.2 Default Input Value

MaxFiberSize
288

7.28.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for those cable sizes the company utilizes under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of The LEC engineering Team subject matter experts

7.28.4 Rationale

Allows the user to enter their companies maximum Fiber size normally deployed as long as it does not exceed 288 strands.

7.29 Maximum Size Feeder Distribution Interface [MaxSizeFDI]

7.29.1 Definition

This input represents the maximum size FDI cross connect box the Model will configure. An FDI is the interface between copper feeder cables and copper distribution cables. FDI's are standard cross-connect boxes deployed in today's network. Size is based on the total of the distribution cable sizes leaving the FDI. For example, if the total distribution cable size is 1800 pair than a 3600 pair FDI is placed. The largest interface assumed is 3600 pair. Beyond that size then two separate interfaces are assumed.

7.29.2 Default Input Value

MaxSizeFDI
4200

7.29.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for those cable sizes the company utilizes under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of The LEC engineering Team subject matter experts

7.29.4 Rationale

Allows the user to enter their companies maximum FDI cross-connect box normally deployed as long as it does not exceed 4200 pairs.

7.30 Maximum Slope Factor [MaxSlopeFactor]

7.30.1 Definition

This value is the distance multiplier when maximum slope causes cables to be extended to "switchback" on a slope or go around large sloping areas.

7.30.2 Default Input Value

MaxSlopeFactor
1.05

7.30.3 Source

The source is taken from the State Soil Geography (STATSGO) data based produced by the United States Department of Agriculture.

7.31 Maximum Slope Trigger [MaxSlopeTrigger]

7.31.1 Definition

Slope triggers are set at the present slope when facilities must be placed along the contours of the hillside rather than in a point-to-point placement. This is one of three different slope triggers used within the model to adjust distance. The maximum slope trigger [default] is set at 30 degrees. When this average is exceeded the distance is adjusted by the maximum slope factor. Reference Section 7.30. For example, if the average terrain within a given grid is 30 degree or less, no additional adjustment for cable distance, and hence cost, is required.

7.31.2 Default Input Value

MaxSlopeTrigger
30

7.31.3 Source

The source is taken from the State Soil Geography (STATSGO) data based produced by the United States Department of Agriculture.

7.31.4 Rationale

Since more cable is required when winding along contours of hillsides rather than cable placement in straight flat terrain, this input allows for the additional distance that facilities will require when traveling along this higher sloped terrain. Thereby, triggering the Model to compensate cables and structures cost.

7.32 Minimum Slope Factor [MinSlopeFactor]

7.32.1 Definition

Slope triggers are set at the present slope when facilities must be placed along the contours of the hillside rather than in a point-to-point placement. Slope factors are the multipliers used to add the additional distance that the facilities must travel as they wind their way across the higher slope terrain. This factor comes in to play when ONLY the minimum slope trigger is exceeded, thereby, adjusting the cable distance using this minimum slope factor.

7.32.2 Default Input Value

MinSlopeFactor

7.32.3 Source

The source is taken from the State Soil Geography (STATSGO) data based produced by the United States Department of Agriculture.

7.32.4 Rationale

Since more cable is required when winding along contours of hillsides rather than cable placement in straight flat terrain, this input allows for the additional distance that facilities will require when traveling along this higher sloped terrain. Thereby, triggering the Model to compensate cables and structures cost.

7.33 Minimum Slope Trigger [MinSlopeTrigger]

7.33.1 Definition

Slope triggers are set at the present slope when facilities must be placed along the contours of the hillside rather than in a point-to-point placement. This is one of three different slope triggers used within the model to adjust distance. The minimum slope trigger [default] is set at 12 degrees. When this average is exceeded the distance is adjusted by the minimum slope factor. Reference Section 7.32. For example, if the average terrain within a given grid is 12 degree or less, no additional adjustment for cable distance, and hence cost, is required.

7.33.2 Default Input Value

MinSlopeTrigger
12

7.33.3 Source

The source is taken from the State Soil Geography (STATSGO) data based produced by the United States Department of Agriculture.

7.33.4 Rational

Since more cable is required when winding along contours of hillsides rather than cable placement in straight flat terrain, this input allows for the additional distance that facilities will require when traveling along this higher sloped terrain. Thereby, triggering the Model to compensate cables and structures cost.

7.34 New Terrain Factor [NewTerrainFactor]

7.34.1 Definition

(Provided as a contingency input in the event the user has data related to additional cost impacting terrain characteristics not presently in the model.)

7.34.2 Default Input Value

NewTerrainFactor
1

7.34.3 Source

7.34.4 Rational

7.35 New Terrain Trigger [NewTerrainTrigger]

7.35.1 Definition

(Provided as a contingency input in the event the user has data related to additional cost impacting terrain characteristics not presently in the model.)

7.35.2 Default Input Value

NewTerrainTrigger
5

7.35.3 Source

7.35.4 Rationale

7.36 Normal Fiber Cover

7.36.1 Definition

This input represents the normal placement depth, in inches, for buried and underground fiber cable as Standards set in the AT&T/Lucent OSP Handbook.

7.36.2 Default Input Value

NormalFiberCover

36.00

7.36.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of The LEC engineering Team subject matter experts.

7.36.4 Rationale

The increased depth over conventional exchange cable is due to large circuit carrying capacity of fiber optic cable and the class of service being transmitted.

7.37 Normal Underground Buried Cover [NormalUGBuriedCover]

7.37.1 Definition

This input represents the normal placement depth, in inches, for buried and underground feeder and distribution cable as Standards set in the AT&T/Lucent OSP Handbook. This would be the minimum depth. Greater depths could be required depending on risk of dig-ups and future digging is likely to occur.

7.37.2 Default Input Value

NormalUGBuriedCover
24.00

7.37.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of The LEC engineering Team subject matter experts.

7.37.4 Rationale

This depth is based on the minimum placement depth for the LECs for Plastic Insulated Copper Conductor [PIC] cables across the United States.

7.38 Optic Fiber Terminal Cost [OpticCost]

7.38.1 Definition

This miscellaneous input represents material and installation cost for fiber optics terminals at the central office and customer location to multiplex DS3 to DS1 circuits.

7.38.2 Default Input Value

OpticsCost
\$75,000.00

7.38.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of The LEC engineering Team subject matter experts.

7.38.4 Rationale

This allows the cost of electronics for terminating private line and digital PBX services at a DS1 signal level.

7.39 Minimum Number of Pairs Per Business Location

[PairsPerBusinessLocation]

7.39.1 Definition

The Model assumes six pairs for a business location. However, the Model uses the actual number of business lines, data utilized from the specific state Base_Loop3_ETRS.csv file, if it exceeds the user adjustable lines per business location. This input is used extensively in Distribution calculations [Term, Drop & NID] and New Distribution.

7.39.2 Default Input Value

PairsPerBusinessLocation
6

7.39.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of The LEC engineering Team subject matter experts.

7.39.4 Rationale

Using this design criterion, cables are then appropriately sized.

7.40 Distribution Pairs Per Residential Housing Unit [PairsPerHousingUnit]

7.40.1 Definition

The Model assumes two pairs for a resident unit. However, the Model uses the actual number of housing units, data utilized from the specific state Base_Loop3_ETRS.csv file. This input is used extensively in Distribution calculations [Term, Drop & NID] and New Distribution.

7.40.2 Default Input Value

PairsPerHousingUnit
2

7.40.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of The LEC engineering Team subject matter experts.

7.40.4 Rationale

Using this design criterion, cables are then appropriately sized.

7.41 Remote Terminal DLC Large Per Line Investment Extended Range [RTDLCLExRange]

7.41.1 Definition

This input defines the cost per remote terminal DLC-L per line investment for the extended range line cards used in calculating of large electronic costs in the Loop.xls module. The default per line investment for extended range cost represents several DLC vendors such as RELTEC and DSC. The value is derived by dividing the cost of the Extended Range line card by 4; the number of circuits on one card. The cards are deployed at the RT end when the loop exceeds 13,600 feet.

7.41.2 Default Input Value

RTDLCLExRange
187.50

7.41.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgement and experience of The LEC engineering Team subject matter experts.

7.41.4 Rationale

Provides the user the ability to place company specific per line cost for large DLC units with extended range line cards that allow for longer loops and retain the ability to offer advanced services in a forward looking network.

7.42 Remote Terminal DLC Small Per Line Investment Extended Range **[RTDLCSExRange]**

7.42.1 Definition

This input defines the cost per remote terminal DLC-S per line investment for the extended range line cards used in calculating of small electronic costs in the Loop.xls module. The default per line investment for extended range cost represents several DLC vendors such as AFC and NEC. The value is derived by dividing the cost of the Extended Range line card by 6; the number of circuits on one card. The cards are deployed at the RT end when the loop exceeds 13,600 feet.

7.42.2 Default Input Value

RTDLCSPerLineExRange
125.00

7.42.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgement and experience of The LEC engineering Team subject matter experts.

7.42.4 Rationale

Provides the user the ability to place company specific per line cost for small DLC units with extended range line cards that allow for longer loops and retain the ability to offer advanced services in a forward looking network.

7.43 Small DLC Electronic Discount [SmallDLCDiscount]

7.43.1 Definition

This miscellaneous input is set at zero percent as discounts are already applied to the DLC and electronic cost data. To apply additional discounts to DLC investment in this table, a user should adjust the total amount of the discount to account for the inclusion of vendor material discounts in the DLC cost tables Section 6.0 of this manual.

7.43.2 Default Input Value

SmallDLCDiscount
0.00

7.43.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of The LEC engineering Team subject matter experts. Discounts are set to zero if the DLC prices already reflect the appropriate discounts

7.43.4 Rationale

Allows the user to adjust for additional DLC discounts for their company specific Digital Loop Carrier costs.

7.44 Water Factor

7.44.1 Definition

This input represents the cost penalty or additive for placing cable in or going around areas with water present at the cable placement depth.

7.44.2 Default Input Value

WaterFactor
30.00

7.44.3 Source

Data was taken from comparable contractor prices for areas with and without water present at or above the cable placement depth.

7.44.4 Rationale

This input allows the user to enter the specific cost penalty applicable to the company or geographical area being studied.